Bandolier 119

Independent evidence-based health care

10 years and counting

The first issue of ***Bandolier*** was in February 1994, so our first 10 years is just about up, depending on how fastidious one is about dates. The early issues had much to do with finding some evidence-based feet, because smart folks had yet to establish the evidence about evidence. We had less than perfect knowledge about how we could be led astray by poor trial design and poor systematic review processes, and nothing much about things like diagnostic testing.

Now it is much better. There's lots of good information that should prevent us from being led astray. In essence it always comes down to the three criteria of quality (avoiding bias), validity (doing studies right, always highly situation dependent), and size (so that we are not carried away by random chance). And we have much more good evidence in many more areas.

Plus ça change

Some things remain the same though. ***Bandolier*** found out early about the interest in things prostatic. ***Bandolier*** 2 looked at uses for PSA tests, and ***Bandolier*** 11 at diagnosis and treatment of BPH. Yet here we are again visiting the same topic. The reason is we now have new and important randomised trials that tell us not just about treatments working, and relative efficacy, but cast light on who to treat. Plus we can compare systematic reviews with new trial data. Given the three verities of quality, validity, and size, they give the same answer.

How to do it

The very first ***Bandolier*** looked at getting research into practice. This issue revisits the topic, with a landmark paper on improving surgical outcomes that borrows from a wealth of evidence. The prediction is that the next 10 years will be much more concerned with getting evidence into practice. In New Zealand primary care, they have established a sympathetic bottom up approach, rather appropriate for 'down-under'.

The next 10 years

Bandolier was originally scheduled for three issues, or perhaps a year. Given this track record, guessing about the next 10 years would be presumptuous. But with the journal, books, 300,000 Internet visitors a week, and a million PDF downloads a year, we'll have to think of something.

Long-term BPH treatment

Bandolier has several times examined treatments for benign prostatic hyperplasia (BPH), and the ***Bandolier*** Internet site has a whole section devoted to systematic reviews and trials conducted in this area. Even so, it is terrific when a new study comes along that extends our thinking. That is particularly the case when such a study [1] fulfils the criteria of high quality, to minimise bias, of validity, to maximise the utility of the results, and size, to be large enough to avoid errors of chance. The Medical Therapy of Prostatic Symptoms (MTOPS) study examined whether therapy with an alpha-blocker (doxazosin) or 5-alpha-reductase inhibitor (finasteride), or combination of both was the better choice.

Study

Men 50 years old or older who had American Urological Association scores of 8 to 30 (moderate or severe, ***Bandolier*** 11) and a maximum urinary flow rate of between 4 and 15 mL/second were recruited. Excluded were men with prior medical or surgical interventions, with low blood pressure, or with a PSA value of more than 10 ng/mL.

Men were randomised to receive placebo, doxazosin (beginning with 1 mg a day and rising to 4 to 8 mg daily), finasteride 5 mg a day, or a combination of both doxazosin and placebo. All treatments were identical. A number of outcomes were examined, including increased symptom score of four points or more over baseline, acute urinary retention, renal insufficiency, urinary tract infection, urinary incontinence, and invasive therapy for BPH (transurethral prostatectomy or incision, laser therapy, stenting, or microwave therapy, or open prostatectomy.

The primary outcome was overall clinical progression (symptom increase, retention, renal insufficiency, recurrent urinary tract infection or incontinence).

In this issue

Table 1: Main outcomes of MTOPS at four years

Number of patients	Placebo	Doxazosin		Finasteride		Combination	
	737	756		768		786	
Outcome	Percent	Percent	NNT (95% CI)	Percent	NNT (95% CI)	Percent	NNT (95% CI)
Any clinical BPH progression	17	9.7	15 (10 to 27)	10	16 (10 to 34)	5.3	9 (7 to 12)
Symptom score increase ≥ 4 points	13	7.3	17 (11 to 35)	8.5	21 (13 to 64)	4.6	12 (9 to 17)
Acute retention	2.4	1.2	NS	0.8	60 (34 to 260)	0.5	52 (32 to 140)
Invasive BPH therapy	5.0	3.4	NS	1.8	31 (20 to 74)	1.5	27 (19 to 59)

Results

Groups were well matched at baseline. Mens' average age was 62 years, most (81%) were white, with a mean symptom score of 16 points, prostate volume of 31 mL, PSA of 1.6 ng/mL, and maximum urinary flow rate of 10.7 mL/second. The overall follow up was 4.5 years in 3,047 men.

At four years, the primary outcome of any clinical BPH progression occurred in 17% of men treated with placebo (Table 1). Lower rates were found with doxazosin (10%) and finasteride (10%), and an even lower rate (5.3%) with combination therapy. The number needed to treat with combination therapy for four years compared with placebo to prevent progression was 9 (95% confidence interval 7 to 12). Pre-planned subgroup analysis for the 20% of men with a baseline PSA of more than 4 ng/mL had NNTs of 5 for finasteride and combination therapy. Pre-planned subgroup analysis for the 30% of men with prostate volume of more than 40 mL was 7 for both subgroups.

The major reason for progression was men having at least a four-point increase in symptom score. Median symptom scores (Figure 1) and maximum urinary flow rates (Figure 2) improved with treatment, especially combination therapy.

Clinical outcomes

Important clinical outcomes of acute urinary retention and invasive therapy for BPH were also reduced with combination treatment. With placebo 2.4% of men had acute urinary retention and 5.0% invasive therapy over four years. For every 52 (32 to 140) men treated with combination therapy for four years, one was spared acute urinary retention (Table 1).

For every 27 (19 to 59) men treated with combination therapy for four years, one was spared invasive BPH treatment, mostly transurethral or open prostatectomy (Table 1). Similar results were found with finasteride alone, but results for these outcomes with doxazosin were not significantly better than placebo. The NNT for sparing invasive therapy with the combination treatment was reduced (improved) to 23 and 16 respectively for men with PSA values of more than 4 ng/mL or prostate volumes of 40 mL or more at baseline.

Adverse events

Table 2 shows adverse events. Dizziness, postural hypotension and asthenia occurred more frequently when doxazosin was used. Erectile dysfunction, decreased libido and abnormal ejaculation occurred more frequently when finasteride was used. Dizziness and erectile dysfunction, for instance, would have affected about one man in 50 more with combination therapy than placebo. Discontinuation rates for any reason were 27% with doxazosin, 24% with finasteride, and 18% (both drugs) with combination therapy. The most common reason for discontinuation was adverse events.

Comment

What we have here is a trial that adds substantially to our knowledge of medical treatment of BPH. It was designed to minimise bias. It was valid because it reported sensible and important outcomes, and was of long duration. Medical treatment of BPH is likely to be life long, so a few months of data is not helpful. And it was large enough to minimise random errors occurring by the whim of chance.

Perhaps the best systematic review of the alpha-blocker terazosin at doses of 2.5 to 10 mg daily [2] examined 10 randomised, double blind studies in over 3,000 men, but over from eight weeks to one year only. Mean improvements in symptom score (30-70%) and maximum flow rate (2-3 mL/second) were about the same as found for doxazosin over four years in MTOPS. The overall all-cause discontinuation rate with terazosin at 27% was the same as found with doxazosin in MTOPS, and with adverse events of dizziness, asthenia and postural hypotension.

Table 2: Main adverse events (% of men) in MTOPS over four years. Bold and shaded areas indicate significant increase over placebo

Adverse event	Placebo	Doxazosin	Finasteride	Combination
Dizziness	2.3	**4.4**	2.3	**5.4**
Postural hypotension	2.3	**4.0**	2.6	**4.3**
Asthenia	2.1	**4.1**	1.6	**4.2**
Peripheral oedema	0.7	0.9	0.7	**1.3**
Dyspnoea	0.6	0.9	0.6	**1.2**
Erectile dysfunction	3.3	3.6	**4.5**	**5.1**
Decreased libido	1.4	1.6	**2.4**	**2.5**
Abnormal ejaculation	0.8	1.1	**1.8**	**3.1**

Figure 1: Median symptom improvement after four years of treatment

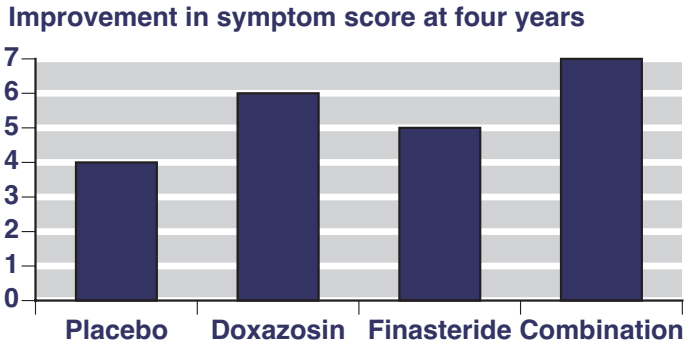
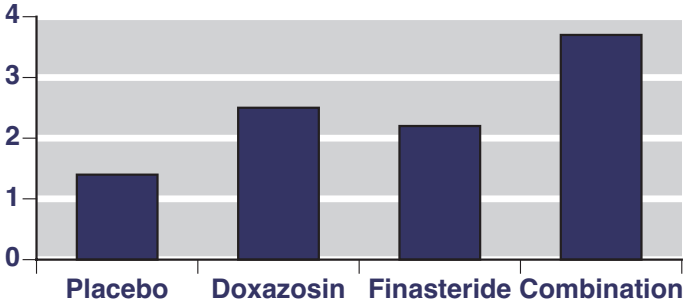


Figure 2: Median urinary flow rate improvement after four years of treatment



The most recent systematic review of finasteride (5 mg daily) [3] had similar results to those from MTOPS. It had data on almost 15,000 men from 19 placebo-controlled studies over three months to four years. Over 18 months to four years the systematic review reported a similar improvement in symptom score (by about 5-6 points) and maximum urinary flow rate (by about 2 mL/second). All-cause discontinuations were also similar, from 13% at one year to 34% at four years.

NNTs compared to placebo at four years to prevent acute retention or BPH-related surgery were 26 and 18, respectively. While somewhat lower (better) than for MTOPS (Table 1), patients included in the systematic review had higher rates of retention and surgery with placebo (Table 3), though the four-year data came from a single large trial [4]. Table 3 also shows two-year data from the systematic review, again with consistent results. MTOPS recruited men who had relatively small prostates (average 31 mL), so the lower rates of acute retention and invasive therapy are consistent with older studies in the systematic review that mainly recruited men with larger prostates.

Pulling it together

So what does all this mean to men with symptoms of prostatic hyperplasia? Alpha-blockers and finasteride are both effective in reducing symptom scores and improving maximum urinary flow rate. In addition, finasteride but not alpha-blockers reduce the chance of acute retention or surgical intervention for BPH. Both come at a price of some (different) adverse events. Combination therapy is even better, but at a higher cost in adverse events, and acquisition costs.

Whether the additional benefit of combination therapy over finasteride is worth the extra cost, offset by lower operation rates, is probably moot.

The possibility is raised of starting with combination therapy, and then removing either finasteride or alpha-blocker. There is one randomised trial that has looked at part of this equation, step-down from combination therapy to finasteride alone [5].

Step-down treatment

The study [5] examined whether men with BPH could be started on dual alpha-blocker and reductase inhibitor treatment, and then have the alpha-blocker withdrawn. Men with clinical BPH, prostates of 40 mL or larger, AUA symptom score of 20 or more, and PSA or less than 4 ng/mL were enrolled. They were given an initial treatment regimen of 5 mg finasteride and 2 mg doxazosin daily, with the doxazosin dose titrated up to 4 or 8 mg. One month later their symptoms were reassessed, and those with a reduction in symptom score and who tolerated the medicines continued in the study.

These were randomised into dosage groups of 2, 4 and 8 mg doxazosin daily, together with 5 mg finasteride daily. They were also randomly assigned to discontinue doxazosin at 3, 6, 9 or 12 months. Patients were evaluated every three months until discontinuation, and then one month after discontinuation of the doxazosin.

The final evaluation consisted of symptom scoring and the question "Would you like to restart the doxazosin?". Successful discontinuation was defined by both the absence of

Table 3: Acute retention and invasive therapy for BPH in two four-year randomised trials (MTOPS, PLESS) at four years, and a meta-analysis at two years

Outcome	Placebo %	Finasteride %	Relative risk (95% CI)	NNT (95%CI)
MTOPS - 4 years				
Acute retention	2.4	0.8	0.3 (0.2 to 0.5)	60 (34 to 260)
Invasive BPH therapy	5.0	1.8	0.4 (0.2 to 0.7)	31 (20 to 74)
PLESS - 4 years				
Acute retention	6.5	2.8	0.4 (0.3 to 0.6)	26 (19 to 44)
Invasive BPH therapy	10.0	4.5	0.5 (0.3 to 0.6)	18 (14 to 27)
Meta-analysis - 2 years				
Acute retention	3.7	1.7	0.5 (0.3 to 0.7)	48 (31 to 112)
Invasive BPH therapy	8.1	4.8	0.6 (0.5 to 0.8	31 (20-61)

any increase in symptom score following discontinuation and a negative response to the question.

Results

The average age of the men was 66 years, and their average prostate size was 54 mL. The rates of successful discontinuation of doxazosin rose from about 20% after 3 months, to about 80% or more at nine and 12 months (Figure 3).

Finasteride is effective over the longer term, and continues to reduce the size of the prostate over at least four years. Alpha-blockers have effects on maximum flow rates almost immediately, but there is no subsequent improvement with longer-term use. Combination therapy seems sensible, but is expensive. This study indicates that for most men the alpha-blocker can be discontinued after nine to 12 months.

Who to treat?

Wise old heads often say that treatment efficacy should not be the prime target of evidence-based thinking, but rather finding out whom to treat with what. Not what to use but who to treat. MTOPS helps here, to some extent. Both for clinical progression and for invasive therapy, lower (better) NNTs were found in men with PSA above 4 ng/mL and with prostate volumes larger than 40 mL.

Prostate volume may be measured in secondary care, but that is unlikely in primary care. Men who do not have enlarged prostates but have a PSA above 4 ng/mL and more severe symptoms might be prime targets for treatment with combination therapy.

And finally

It is rare that we are able to compare both systematic reviews of treatments and subsequent large randomised trials, where the criteria of quality, validity, and size are all met in both. We have that for alpha-blockers [2] and for finasteride [3]. They produce essentially the same results. MTOPS [1], independent and principally supported by the NIH, produced results essentially the same as those from systematic reviews of trials supported principally by manufacturers for both alpha-blockers and finasteride. In addition, the prediction of the systematic review of finasteride, that finasteride works well in men with smaller prostates, was vindicated by MTOPS. Good news all round.

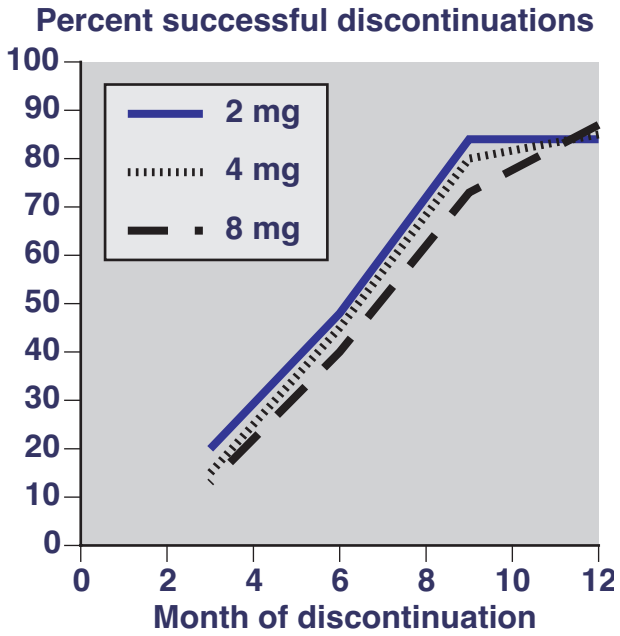
References:

1 JD McConnell et al. The long-term effect of doxazosin, finasteride, and combination therapy on the clinical progression of benign prostatic hyperplasia. New England Journal of Medicine 2003 349: 2387-2398.

2 TJ Wilt et al. Terazosin for treating symptomatic benign prostatic obstruction: a systematic review of efficacy and adverse effects. BJU International 2002 89: 214-225.

3 JE Edwards, RA Moore. Finasteride in the treatment of clinical benign prostatic hyperplasia: a systematic review of randomised trials. BMC Urology 2002 2: 14 (http://www.biomedcentral.com/1471-2490/2/14).

Figure 3: Successful discontinuation of alpha-blocker doxazosin (2, 4 or 8 mg) in combination with finasteride after different periods of use



4 JD McConnell et al. The effect of finasteride on the risk of acute urinary retention and the need for surgical treatment among men with benign prostatic hyperplasia. New England Journal of Medicine 1998 338: 557-563.

5 KC Baldwin et al. Discontinuation of alpha-blockade after initial treatment with finasteride and doxazosin in men with lower urinary tract symptoms and clinical evidence of benign prostatic hyperplasia. Urology 2001 58: 203-209.

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Getting better – myocardial infarction

People often ask the question about whether evidence-based medicine "works". This is a difficult one, for several reasons. The question as it stands is indistinct, because we all use evidence of a sort. Perhaps it should be whether using good evidence is better than using bad evidence, or no evidence. Philosophers, professional and amateur, could spend ages over the question before even attempting an answer.

Again, we tend to think of EBM as a result about a particular intervention, achieved usually through a systematic review (and probably some form of meta-analysis), or with results from a solid randomised trial. Yet healthcare is multidimensional, and often involves complex packages of care, of which a single intervention may play only a small part.

Bandolier 100 highlighted a study from South Derbyshire showing that over five years from 1995 to 1999 mortality over 30 days and one year after a heart attack showed consistent year-on-year reductions, alongside improvements in the use of treatments for which there was a strong evidence base. ***Bandolier*** had overlooked a US report showing the same thing, but over a longer period [1].

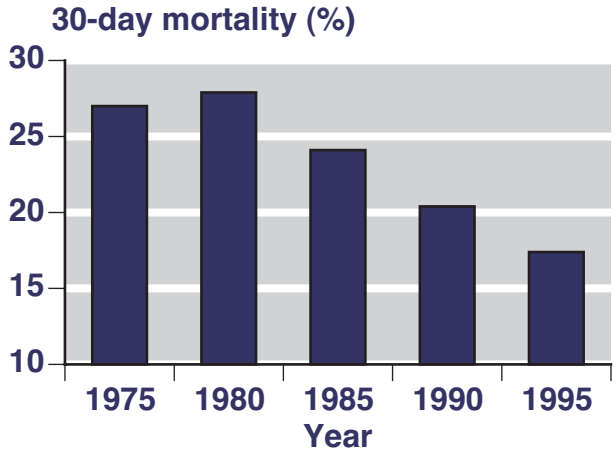
Study

The review used data from a variety of sources, including population-based studies reporting at least 10 years of data to determine changes in intervention rates for different therapies, meta-analyses of randomised trials to estimate benefit, and incidences of myocardial infarction in the US from a national hospital discharge survey. From these, a 30-day mortality was calculated, and the contribution of various treatment changes calculated.

Results

The main results are shown in Table 1. The age and sex adjusted incidence of myocardial infarction fell between 1975 and 1995 by 29%, with most of the reduction in the early 1990s. More people had hypertension. Over the period the average age of patients with myocardial infarction increased by five years, with 7% more women diagnosed.

Figure 1: Age and sex adjusted 30-day mortality after myocardial infarction in the USA



Severity of acute myocardial infarction seems to have declined. Though this may be because of better diagnostic sensitivity, it also indicates that significant population changes occurred over the period, probably relating to adherence to healthier lifestyles.

Using therapies with clear reduction of mortality after a heart attack increased over the period (Table 1). Aspirin use increased from 5% in 1975 to 75% in 1995, for instance. The result was a consistent fall in 30-day mortality from just under 30% in 1975 and 1980, to 17% in 1995. (Table 1, Figure 1). The largest benefits were calculated to come from use of aspirin (30% contribution) and thrombolysis (15%).

Comment

This report ties in well with that from South Derbyshire, which reported a 13% 30-day mortality by 1999. Both reports show increased use of interventions with a good evidence base in a complex situation combining to deliver large reductions in mortality after a heart attack.

Table 1: Main changes in myocardial infarction incidence and treatment in the USA

Variable	1975	1980	1985	1990	1995
New MI (age/sex adjusted to 1996, thousands)	613	527	591	481	437
Patient characteristics and infarct severity					
Age (years)	64	66	68	68	69
Hypertension (%)	40	48	48	51	55
Anterior or lateral location (%)	49	49	48	41	35
Q-wave infarction (%)	73	67	61	55	48
Use of therapies with clear mortality benefit					
Aspirin (%)	5	6	30	62	75
Beta-blockers (%)	21	42	48	47	50
Thrombolytics (%)	0	0	9	25	31
ACE inhibitors (%)	0	0	0	13	21
Primary angioplasty (%)	0	0	0	NA	9
30-day fatality rate (age/sex adjusted to 1995, %)	**27**	**28**	**24**	**20**	**17**

The US study also indicates that improved diagnosis, contributing about 18% to the reduced mortality, mainly through increased use of cardiac enzyme tests. Even better tests now coming into use (at least in the US) could contribute further by diagnosing smaller infarcts, so that treatment can be appropriate.

As well, there is the contribution of healthier lifestyles. Fewer heart attacks, and less severe heart attacks, both contribute to reduced mortality. Again, here is an area with a good evidence base (just look at the ***Bandolier*** Internet section on healthy living for an overview). Part of the US population has clearly got the message.

So it may be complex, and getting it all into practice may be spotty, but over all, in behaviour, diagnosis, and treatment, use of good evidence seems to be producing the expected benefits.

Reference:
1 PA Heidenreich, M McLellan. Trends in treatment and outcome for acute myocardial infarction: 1975-1995. American Journal of Medicine 2001 110: 165-174.

Bed rest after heart attack

How long should someone stay in bed after an uncomplicated heart attack? Guidelines from cardiologists in the USA and Europe recommend at least 12 hours bed rest in such patients. The reasons for bed rest include reduced workload on the heart, avoiding poor perfusion and possible further damage to the myocardium. But if patients stay immobile for too long, they may be at increased risk of thromboembolic complications. A systematic review of controlled trials [1] tells us that longer bed rest is no better than shorter bed rest, but may leave a few unanswered questions.

Systematic review

Searching involved six electronic databases, as well as textbooks and reference articles. For inclusion patients had to have uncomplicated myocardial infarction, and be controlled studies (randomised or quasi-randomised) of shorter versus longer periods of bed rest. Various endpoints were used, including mortality, angina pectoris, reinfarction and thromboembolic events.

Results

There were 15 studies, the earliest published in 1954 and the most recent in 1989; most were published in the 1970s. Oral anticoagulants were used in six studies and thrombolysis in one. The mean age in the studies ranged between 52 and 67 years, with women representing 9% to 28% of patients. The shorter duration of bed rest varied between two and 14 days, and the longer between five and 40 days. Follow up times were varied, between five days and a year.

For no outcome was shorter bed rest any different than longer bed rest (Table 1). Mortality, angina, reinfarction and venous thrombosis all had relative risks that included 1, indicating no significant difference between treatments.

Most information was for mortality, where there were consistent results in 13 trials (Figure 1). For this outcome it was possible to perform sensitivity analyses. No sensitivity analysis produced any different result, using only those trials unequivocally properly randomised, or including those where the method of randomisation was not stated, or trials where the shorter period of bed rest was less than seven days, or those where anticoagulants or thrombolysis was used (Table 2).

Figure 1: Individual trials of shorter versus longer bed rest

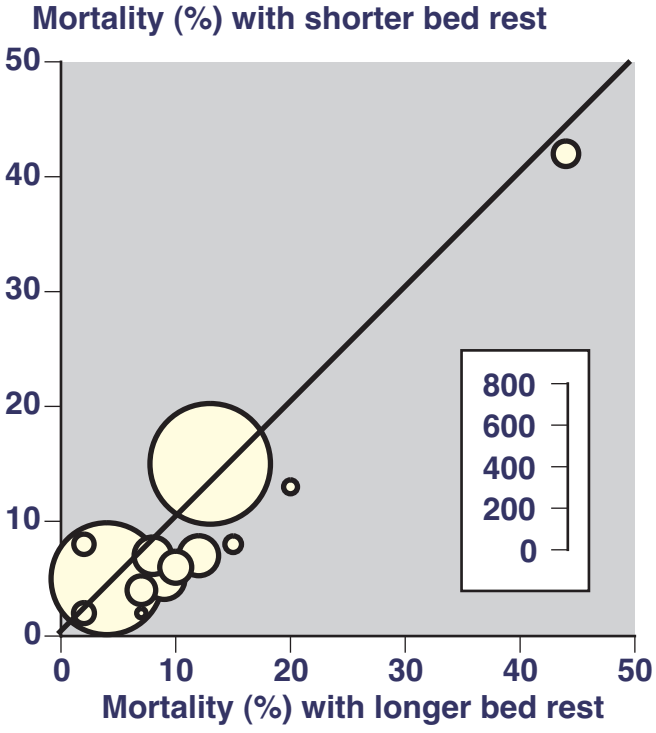


Table 1: Major outcomes after shorter versus longer periods of bed rest after uncomplicated myocardial infarction (all trials)

Outcome	Number of		Percent mortality		Relative risk (95% CI)
	Trials	Patients	Shorter	Longer	
Mortality	13	2496	10	11	0.9 (0.7 to 1.2)
Angina pectoris	7	1865	7	7	1.0 (0.7 to 1.4)
Reinfarction	11	2372	9	8	1.1 (0.9 to 1.5)
Venous thrombosis	6	755	6	8	0.8 (0.4 to 1.3)

Table 2: Mortality after shorter versus longer periods of bed rest after uncomplicated myocardial infarction, sensitivity analysis by trial type

Trial description	Number of Trials	Number of Patients	Percent mortality Shorter	Percent mortality Longer	Relative risk (95% CI)
All trials	13	2496	10	11	0.9 (0.7 to 1.2)
Randomisation unequivocal	4	931	5	5	0.9 (0.5 to 1.6)
Randomisation stated	8	1389	9	9	0.9 (0.7 to 1.3)
Short rest less than 7 days	9	1882	9	9	1.0 (0.8 to 1.4)
Anticoagulants used	7	1663	10	9	1.0 (0.7 to 1.3)

Comment

Trials were old, many were small, and some had problems with quality that could lead to potential bias. Yet for different outcomes, and using sensitivity analysis, no benefit of longer over shorter bed rest was found. Unless there are compelling reasons, there would seem to be no need to spend many days in bed after an uncomplicated heart attack.

Reference:
1 H Herkner et al. Short versus prolonged bed rest after uncomplicated acute myocardial infarction: a systematic review and meta-analysis. Journal of Clinical Epidemiology 2003 56: 775-781.

IMPROVING SURGICAL OUTCOMES

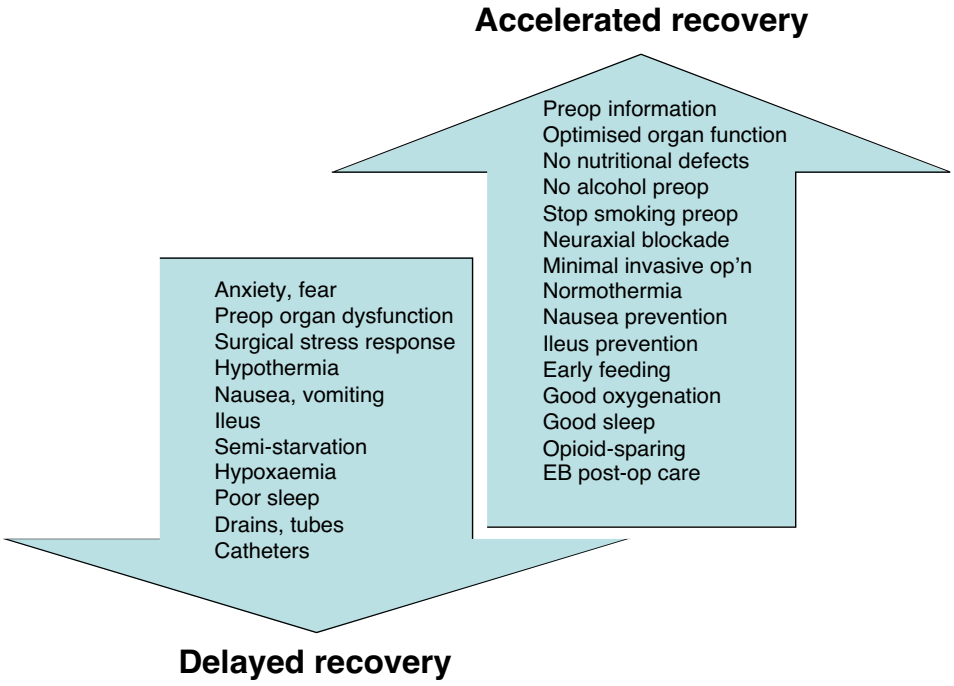
Bandolier occasionally likes to look at something different. A remarkably different paper from 2002 might be hailed as a new departure in the use of evidence [1]. This paper applies the best evidence we have to thinking about surgical interventions, and not just what to do, but how to do it. It pulls together evidence about perioperative medicine, performs a systematic review of pilot studies, and suggests mechanisms of implementation.

Review of evidence

The paper has 144 references, many of them systematic reviews and meta-analyses in the area of perioperative medicine. While in some circles surgery is thought to be an "evidence-free zone", there is actually a remarkably strong body of evidence, and particularly in the area of perioperative medicine. The review of evidence (Figure 1) breaks this down into:

- Preoperative period: for instance, the importance of alcohol avoidance preoperatively, and nutritional support for malnourished patients are both effective in reducing complications.
- Prophylactic antibiotics: good evidence-base here, with several meta-analyses, including in the Cochrane Library.
- Regional anaesthesia: reduction in surgical stress response reduces catabolic tone postoperatively, and in some circumstances postoperative ileus. Other beneficial procedures include nerve blocks and use of local anaesthetic wound infiltration.
- Minimally invasive surgery.
- Intraoperative normothermia.
- Postoperative care: including minimal use of drains, mobilisation, feeding, and sleeping.
- Thromboembolic prophylaxis.
- Pain control.
- Anti-nausea prophylaxis.
- Postoperative oxygen administration.
- Convalescence.

Figure 1: Factors in recovery from surgery



Review of pilot studies

The authors provide us with a summary of results from fast-track surgical programs, most of which are small, and not randomised, and in many different settings. As such, they would be inadequate compared with a review based only on randomised trials.

Organisational steps for fast track surgery

1 Develop a plan or critical pathway
2 Outline specifics of preoperative preparation
3 Develop anaesthesia and analgesia programmes
4 Minimise stress of operation
5 Adjust postoperative care according to evidence-based studies
6 Develop postoperative nursing care programmes
7 Determine patient follow up
8 Develop a patient information programme
9 Document results, tabulate problems and patient satisfaction.
10 Revise and improve programme

On the other hand, fast track programs reduced postoperative hospital stay by 60-70%. For instance, two case series of open and laparoscopic colorectal resections sent patients home in 2-3 days, compared with 4-11 days with traditional surgery, and with reduced morbidity in high risk patients.

Doing it

Accelerated recovery programmes need multidisciplinary collaboration and seamless organisation. An bare outline of the process is in the Box. The authors set out known principles of good management (the sort that get things done, not medical management, or the sort in large organisations that exist to ***avoid*** getting things done).

Comment

Cookbook medicine this is not. The complete article it is not. But, boy, does it make you think. This particular paper could be expanded into a book, and any sensible publisher would be on the 'phone to sign the authors up. There is much evidence, and more coming, with a conveyor-belt of systematic reviews appearing in perioperative medicine, particularly from Denmark and Switzerland.

The paper makes you think about research. It isn't just saying that we need randomised trials of A versus B. The trouble is that with complex packages of care, A will rarely be A, and B will rarely be B, because the packages will change with local circumstance. So such trials may lack applicability outside of the particular circumstance in which it was conducted. We may have to think more about applying the principles of industrial quality control to surgical (and other care). Not being randomised may not mean not being best.

Reading this paper is a great way to start the new year, by blowing away lots of cobwebs. No-one who is involved with planning surgical care, or hospital services, or healthcare services in general can afford not to read it. It may give you a glance at a future coming to you soon.

Reference:
1 H Kehlet, DW Wilmore. Multimodal strategies to improve surgical outcomes. American Journal of Surgery 2002 193: 630-641.

New Zealand background

bpac^{nz} was established in July 2003 as a partnership between the University of Otago, Southlink Health, First Health and the IPA Council. Southlink Health and First Health are both Independent Practitioner Associations (IPAs) and the IPA Council is a national body representing 17 IPAs. IPAs were set up by general practitioners as representative bodies to communicate with health authorities with the view that GPs could be more effective working as a group than as individuals, and have evolved to provide educational, systems and pastoral support to their members.

IPAs also hold budgets for pharmaceuticals and laboratory tests. To manage demand, IPAs established pharmaceutical facilitation services based around feedback and the promotion of evidence based practice, usually employing pharmacists to facilitate discussion in small group meetings.

Best Practice Advocacy Centre

The aim was to embrace marketing techniques and promote pharmaceutical and prescribing best practice to GPs, developed in close consultation with GPs. As a result the Best Practice Advocacy Centre began providing GPs with:

- Regular, detailed feedback on their prescribing including peer comparisons.
- Evidence based resources including our own series of POEMs, bulletins, patient information, etc.
- Regular representative visits to discuss prescribing reports and recommendations.
- And of course, a subscription to Bandolier.

The concept was to provide a framework in which individuals could review their own prescribing and draw their own conclusions as to the need for change. Representatives made sure that our message didn't get lost in the mail pile, and added value by providing GPs the opportunity to discuss their prescribing and the recommendations. The idea was to challenge GPs to review their prescribing, not tell them what to do.

The establishment of bpac^{nz}

In 2002 it was decided to have one national NZ organisation promoting best practice. bpac^{nz} is an independent organisation whose role is to promote responsible use of pharmaceuticals to general practitioners and other health professional groups throughout New Zealand. bpac^{nz} aims to:

- develop and distribute resources that provide prescribers with a sound basis on which to review the way they prescribe for and treat their patients.
- provide clear, concise and relevant information based on the best available evidence (hence the appeal of Bandolier).
- use a collaborative and cooperative approach coupled with appropriate marketing and market analysis to ensure we develop positive programs targeted to meet the needs of prescribers and patients.